



# CITY OF SANTA BARBARA

## COUNCIL AGENDA REPORT

**AGENDA DATE:** January 13, 2009

**TO:** Mayor and Councilmembers

**FROM:** Water Resources Division, Public Works Department

**SUBJECT:** 2008 Annual Water Supply Management Report

### **RECOMMENDATION:**

That Council approve and adopt the City of Santa Barbara Water Supply Management Report for the 2008 water year, finding groundwater resources are in long-term balance in accordance with the conjunctive management element of the City's Long-Term Water Supply Program (LTWSP).

### **DISCUSSION:**

The Water Supply Management Report (WSMR) is an annual report summarizing activities of the past water year (October 1, 2007 through September 30, 2008). City staff uses the WSMR as an opportunity to inform Council and the public about recent activities and current water supply conditions. The report also fulfills a mitigation requirement for the Coastal Branch of the State Water Project, which requires that water supplies be managed in such a manner as to prevent long-term over drafting of local groundwater supplies. Key issues discussed in the 2008 WSMR are summarized below.

- Groundwater resources are in balance and long-term groundwater production does not exceed perennial basin yield.
- Due to heavy rainfall, Lake Cachuma filled completely in January 2008 and ended the water year at 93% of capacity. As the City's largest water supply source, Lake Cachuma is the most important indicator of the City's water supply status. While our water supply is always managed with potential drought in mind, the current high level of storage means there are no immediate concerns about local drought.
- The burning of 60% of the Gibraltar watershed in 2007, followed by heavy rainfall this past winter, resulted in erosion and sediment flows that reduced the storage capacity of Gibraltar Reservoir from 6,800 acre-feet (AF) to 5,300 AF. Due to this loss in capacity, staff is working to implement provisions of the 1989 "Pass

Through Agreement” to allow delivery of a portion of the City’s Gibraltar water through Lake Cachuma. Gibraltar Reservoir ended the year with storage at 75% of the new 5,300 AF capacity. The fire also resulted in significant water quality problems, requiring additional effort and expense for water treatment. Further siltation and water quality problems can be expected if heavy rainfall develops during the current rainy season.

- A major ruling by the State Water Resources Control Board on water rights for the Cachuma Project is still pending. At issue is how water should be managed to balance the needs for our water supply, while protecting fish. It is unknown at this time when a ruling can be expected.
- The City’s award winning Water Conservation Program continues to serve City customers. Landscape design standards for water conservation were updated this year and a rain sensor rebate program was launched. Demand for 2008 was 14,669 AF, down about 300 AF from the extremely dry 2007 water year, but still reflecting an unusually dry spring. Currently, demand during a year of normal rainfall is estimated to be about 14,500 AF per year, or about 11% below the 1988 level of 16,300 AF.

In summary, water supplies continue to be sufficient to meet the goals of the City’s LTWSP, adopted in 1994. Extensive work is under way to develop the water supply and demand information necessary to update the LTWSP in conjunction with the *Plan Santa Barbara* process.

The draft WSMR has been made available for public review and comment. On December 6, 2008, the City Water Commission reviewed the draft WSMR and voted to recommend approval with suggested additions and clarifications that have been incorporated.

**ATTACHMENT:** 2008 Water Supply Management Report

**PREPARED BY:** Rebecca Bjork, Water Resources Manager/BF/spm

**SUBMITTED BY:** Christine F. Andersen, Public Works Director

**APPROVED BY:** City Administrator’s Office



## City of Santa Barbara

# Water Supply Management Report

2008 Water Year (October 1, 2007 – September 30, 2008)

Water Resources Division, Public Works Department  
December 2008

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## INTRODUCTION

The City of Santa Barbara operates the water utility to provide water for its citizens and visitors. Santa Barbara is an arid area and providing an adequate water supply requires careful management of water resources. The City has a diverse water supply including local reservoirs (Lake Cachuma and Gibraltar Reservoir), groundwater, State Water, desalination, and recycled water. The City also considers conservation an important tool for balancing water supply and demand.

The City's Long-Term Water Supply Program (LTWSP) was adopted by City Council on July 5, 1994. While it is the current strategic plan for the City's water supply, the City is conducting analyses to update the LTWSP in conjunction with the current *Plan Santa Barbara* process.

This annual report summarizes the following information:

- The status of water supplies at the end of the water year (September 30, 2008)
- Water conservation and demand
- Drought outlook
- Major capital projects that affect the City's ability to provide safe clean water
- Significant issues that affect the security of the City's water supplies

Appendix A provides supplemental detail. Additional information about the City's water supply can be found on-line at: <http://www.SantaBarbaraCa.gov/water>

On December 8, 2008, the Water Commission reviewed the draft and voted to recommend adoption of the report with modifications, which have been incorporated.

## WATER SUPPLIES

The City has developed five different water supplies: local surface water; local groundwater (which includes water that seeps into Mission Tunnel); State water; desalinated seawater; and recycled water. Typically, all of the City's demand is met by local surface water reservoirs and recycled water, augmented as necessary by local groundwater and State Water. The City's desalination facility is currently off-line.

The City's local surface water comes from Gibraltar Reservoir and Lake Cachuma, both of which are located in the upper Santa Ynez River watershed. The inflow to these reservoirs is rainwater, so rainfall data for Gibraltar Reservoir is very important for water supply management purposes. Figure 1 shows rainfall for the past ten years as compared to the

49-year average. Additional historic rainfall information is included in Appendix A. Runoff generated by average rainfall is generally enough to fill Gibraltar; however, it takes above-average rainfall to produce any significant inflow to Cachuma. Rainfall during the past year was just over average, but about 75% occurred in the month of January. To enhance rainfall, the City participates in the cloud seeding program administered by the County of Santa Barbara. However, the program has been limited to the North County watersheds for the coming year due to concerns about potential erosion resulting from the Zaca Fire.

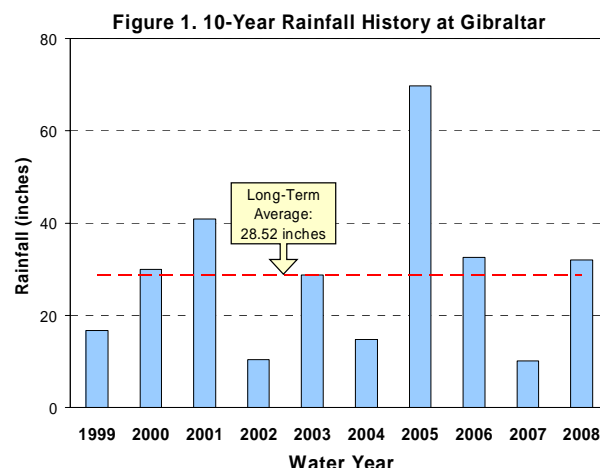


Table 1, below, summarizes the status of the City's various water supplies at the end of the 2007-2008 water year.

<b>Table 1. End of Year Status of City Water Supplies*</b>	
Lake Cachuma	<p>Total Capacity: 186,636 AF (2008 survey)</p> <p>End of Year Storage: 173,280 AF</p> <p>Percent of Total Capacity: 93%</p> <p>The City's share of the Cachuma Project normal annual deliveries is 8,277 AF. Due to availability of surplus, actual use was 10,395 AF. The unused portion of the City's share, in the amount of about 2,800 AF, has been carried over to the current year.</p>
Gibraltar Reservoir	<p>Total Capacity: 5,303 AF (2008 survey)</p> <p>End of Year Storage: 3,983 AF</p> <p>Percent of Total Capacity: 75%</p> <p>Gibraltar Reservoir typically fills and spills about two out of every three years. Deliveries over the past ten years have averaged 3,600 AFY. Deliveries were reduced in 2008 to 1,641 AF due to water quality problems related to the Zaca fire and uncertainty as to remaining unsilted capacity.</p>
Mission Tunnel	Groundwater that seeps into Mission Tunnel is an important part of the City's water supply, providing 1,100 AF in 2008, equal to the long-term average.
Groundwater	Groundwater levels remain high since they have been pumped at less than the annual recharge rate during the past decade. Four of nine production wells are currently available for production. Four additional wells feeding Ortega Groundwater Treatment Plant (OGTP) are scheduled for rehabilitation in conjunction with the upgrade of the OGTP. The City used 882 AF of groundwater during 2008.
State Water Project (SWP)	The City has a 3,000 AF entitlement, plus 300 AF drought buffer. The Coastal Branch and Santa Ynez Extension of the SWP are in place to deliver the City's SWP water into Lake Cachuma, subject to availability of water supplies. The City used 631 AF of State Water in 2008.
Desalination	The desalination plant remains in long-term storage mode and no water was produced this year. Staff projects no need for desalinated water within at least the next 5 years.
Recycled Water	The City's Water Reclamation Project provides recycled water to parks, schools, golf courses, other large landscaped areas, and some public restrooms. The system typically provides approximately 5% of the total water demand. Demand from recycled water customers was 803 AF in 2008.

\*The Water year runs from October 1 through September 30. All data above is as of September 30, 2008

## **CITY WATER CONSERVATION PROGRAM**

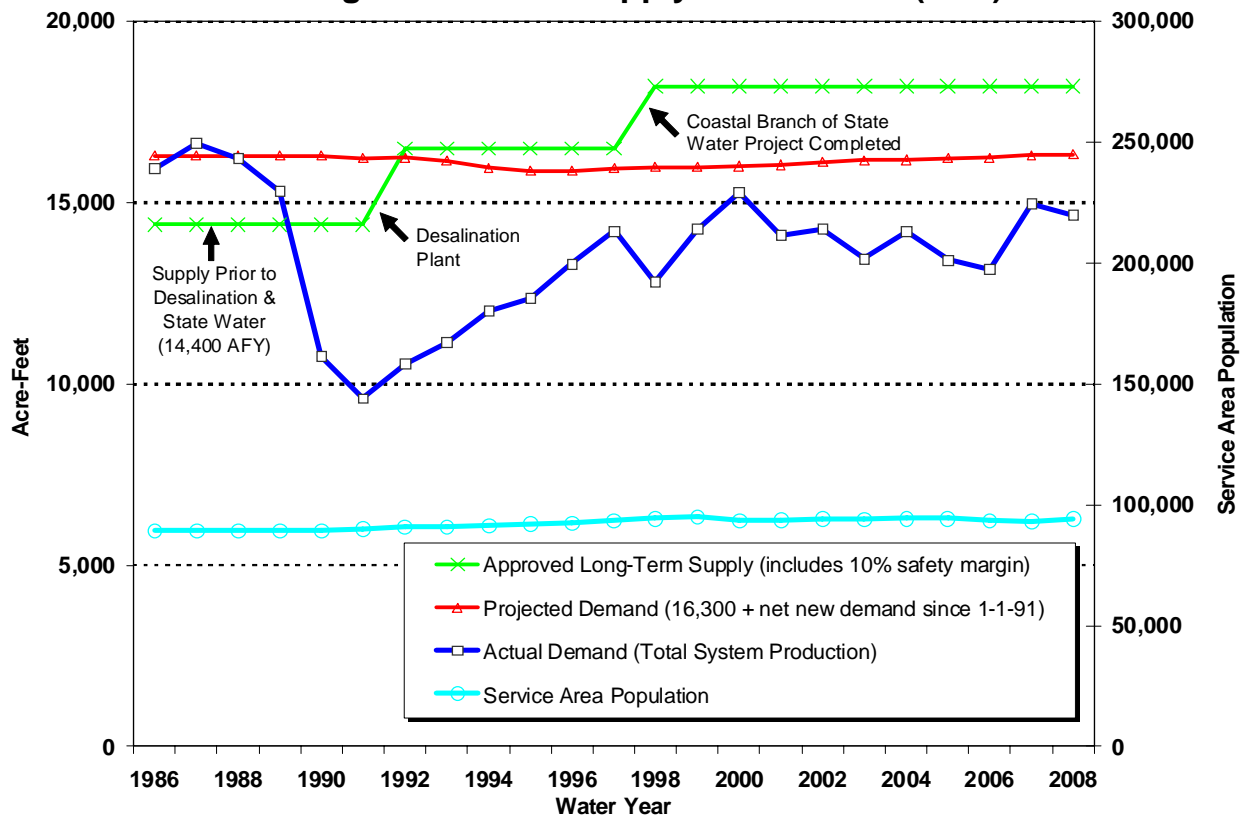
The City depends on water conservation as a part of its water supply plan and is an active member of the California Urban Water Conservation Council (CUWCC). The City's Water Conservation Program continues to focus on implementing the Best Management Practices (BMPs) defined by CUWCC, as well as pursuing additional progressive opportunities for water conservation. Highlights of the City's water conservation program include the following, some of which are administered jointly with other local water agencies:

- Free water check-ups for City water customers (548 check-ups during the past water year). A customer survey program demonstrates a continuing high level of customer satisfaction.
- Joint sponsorship of regional water efficiency programs, including the "20 Gallon Challenge" media campaign, the "Garden Wise Guys" television show, the California Landscape Budgets Program, and residential and commercial rebate programs.
- Green Gardener Program, which provides bilingual training for landscape maintenance professionals in resource-efficient and pollution-prevention landscape maintenance practices (Almost 1,000 participants in the standard class and 122 in the advanced class since 2000).
- Maintain the "Watering Index" and "Landscape Watering Calculator," easy-to-use web-based tools that help estimate the right amount of water to apply to a landscape.
- Public information is provided for City water customers including a wide variety of web-based conservation information at the City's web site ([www.SantaBarbaraCA.gov/water](http://www.SantaBarbaraCA.gov/water)) and the regional web site ([www.sbwater.org](http://www.sbwater.org)). Additionally, over 20 different brochures on water efficient practices and water wise landscaping are available free to City water customers.
- Water education program reaching approximately 2,000 K-12<sup>th</sup> grade students per year through classroom presentations, wastewater treatment plant tours, curriculum distribution, and the Water Awareness High School Video Contest.
- Updated the City's Landscape Design Standards for Water Conservation.
- Hotels and motels are being contacted to encourage participation in public information efforts aimed at their guests.
- Launched the Rain Sensor Program, which provides a free rain sensor, or a voucher of up to \$50 for installation of a sensor. A rain sensor automatically shuts off the irrigation controller during and immediately after it rains. 75 rain sensors and redeemed vouchers have been issued to date.

## **MONITORING OF WATER SUPPLY AND DEMAND**

Water demand is measured by water production, because water is produced to meet the demand. Figure 2 illustrates the tracking of supply and demand during the period of the LTWSP. It shows the original approved water supply, and how it was augmented with desalination and State Water. It also shows the history of demand, both on an actual basis and as a theoretical year by year demand projection, reflecting the estimated net effect of new development and identifiable conservation savings since 1991.

**Figure 2. Water Supply and Demand (AFY)**

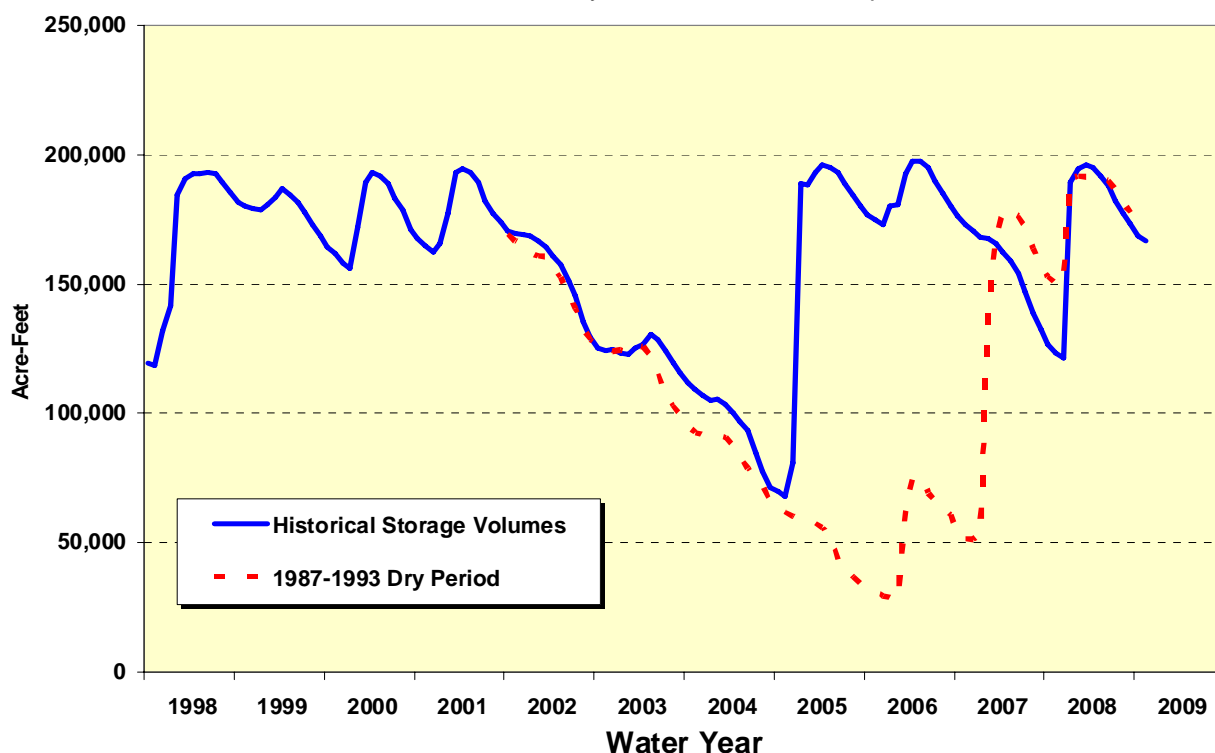


Total system water production (potable plus recycled water) for the 2007-2008 water year was 14,669 AF compared to a projected normal year demand of 14,500 AF. Except for a minor influence associated with new development, the relatively high demand during the past two years can mostly be attributed to below average rainfall. In 2007, rainfall was the lowest in over a century. In 2008, there was average rainfall, but 75% of it occurred in January. The recent demand history is shown as the “Actual Demand” line in Figure 2.

## Drought Outlook

Because the City depends heavily on local surface water, drought is the situation most likely to reduce our available water supplies. Lake Cachuma is our primary source of surface water and its storage level is the most important indicator of potential near-term drought impacts. Figure 3 shows a recent history of storage levels at Lake Cachuma. The dry period of 1987 through 1993, the most recent severe drought, is shown in comparison to the dry period of 2002 through 2004. While last year’s rainfall was sufficient to fill Lake Cachuma and drought is not a near-term concern, supplies are managed with the idea that the next drought may already have begun.

Figure 3. 10-Year History of Lake Cachuma Storage Levels (AF)  
With 1987-1993 Dry Period Shown for Comparison



## CAPITAL PROJECTS

Staff continues work on a number of projects to improve the reliability and quality of City water supplies:

- ***San Roque and High School Wells:*** The construction needed to complete the San Roque well is anticipated to be complete in 2009. The High School well water quality is such that treatment will be required for this well. Staff is evaluating the best way to provide such treatment.
- ***Ortega Groundwater Treatment Plant:*** Staff continues the extensive process of upgrading the Ortega Groundwater Treatment Plant and rehabilitating the four wells that feed into it. The project aims to preserve an important part of the City's water supply for use to meet peak demands, back-up surface water supplies during drought, and provide an emergency water supply in the event of catastrophic supply interruptions. A new treatment scheme is being evaluated with the hope of significantly reducing the cost and scope of the project.
- ***Tertiary Treatment Plant:*** The preliminary design report on rehabilitation of the tertiary filters at El Estero Wastewater Treatment Plant was completed during the past year. The design effort looked at options to improve turbidity removal and reduction of the level of dissolved salts in the City's recycled water.

## **WATER SUPPLY ISSUES**

There are a number of significant issues related to the City's water supplies, discussed briefly below.

*Cachuma Project Water Rights Hearing:* Members of the Cachuma Project continue to await a decision by the State Water Resources Control Board (SWRCB) following a major hearing on the Cachuma Project's water rights completed in November 2003. This was a continuation of SWRCB's long-standing review of the Cachuma Project in terms of its effects on downstream water users and on Public Trust resources. A December 2002 settlement agreement among several of the participants in the hearing significantly reduced the number of issues involved. The SWRCB ruling has been repeatedly delayed pending completion of the necessary environmental documents.

The eventual ruling has the potential for significant impacts on the water rights for the Cachuma Project, the largest single source of supply for the City. The issue has been made more complex by the endangered species listing of the steelhead trout. The listed steelhead are defined as rainbow trout that are anadromous (travel to the ocean) and that inhabit areas below the first ocean migration barrier, which is Bradbury Dam at Lake Cachuma. Thus, rainbow trout above Bradbury Dam are not listed. The City has worked as a member of the Cachuma Conservation Release Board, along with other affected agencies, to continue data collection and research, and to complete projects aimed at enhancing steelhead habitat, improving fish passage, and providing flow augmentations for steelhead, consistent with the Lower Santa Ynez River Fish Management Plan prepared by the Santa Ynez River Technical Advisory Committee in 2000.

*Gibraltar Pass Through Operations:* The Zaca Fire burned approximately 60% of the Gibraltar Reservoir watershed, normally the source of about 35% of the City's water supply. On top of historical siltation, the reservoir's storage capacity has now been reduced by an additional 1,500 AF, leaving a storage volume of 5,303 AF. In 1989, the City entered into the Upper Santa Ynez River Operations Agreement (the "Pass Through Agreement") with other members of the Cachuma Project. The City agreed to defer its planned enlargement of Gibraltar Reservoir in exchange for provisions that would allow the City to "pass through" a portion of its Gibraltar water to Lake Cachuma for delivery through Cachuma Project facilities. The City has now elected to commence this phase of operations and is working with the U.S. Bureau of Reclamation to negotiate a "Warren Act" contract, as required by federal law to allow such use of the Cachuma Project. The pass through option will allow the City to stabilize its Gibraltar yield as the reservoir continues to silt in.

*State Water Project/Delta Smelt-Wanger Decision:* In August 2007, U. S. District Judge Oliver Wanger ordered a significant decrease in the amount of water pumped out of the Sacramento-San Joaquin Delta. The ruling came in a suit involving the endangered Delta smelt. This decision continues to constrain deliveries of State Water through the Delta. As a result of this constraint and reduced statewide rainfall in the past two years, the Department of Water Resources is currently only projecting deliveries of 15% of allotments for State Water Project participants during 2009. The City relies on State Water to a

limited extent and only planned on deliveries at about this level. However, we continue to work with the Central Coast Water Authority to identify options for water banking or other opportunities to allow for storage of delivered State Water to augment supplies in the event of a sustained dry period.

*Plan Santa Barbara/Long-Term Water Supply Program Update:* As the City conducts the *Plan Santa Barbara* process to update the General Plan, analysis of the City's long term water supply is being done to support the process and provide the information needed for an update of the City's Long-Term Water Supply Program (LTWSP). The following efforts will provide the necessary information:

- **Desalination Rehabilitation Study:** The study will assess the feasibility, schedule, cost, and permitting issues associated with potential future use of the facility, if it is needed in response to severe drought or other supply interruptions.
- **Water Supply Planning Study:** This study will examine the cost and feasibility of expanded use of recycled water, opportunities for increased water conservation, State Water Project reliability, potential effects of climate change, and a general evaluation of the City's water supply management practices.
- **Water Demand Factor Update:** Demand factors for key types of development will be updated to support water use analysis that will be a part of the *Plan Santa Barbara* process.
- **Water Supply Modeling Update:** Based on information developed above, modeling of the City's water supply will be updated to re-evaluate the current water supply to support the *Plan Santa Barbara* process.

The information developed above will be the basis of a recommendation to update the LTWSP for the period of 2010 through 2030.

## **Appendix A – Supplemental Water Supply Information**

### ***Groundwater Balance***

Project conditions of the State Water Project (SWP) require the City to use SWP water to offset any demonstrated groundwater basin overdraft. Under the LTWSP, the City uses groundwater conjunctively with surface supplies, such that significant groundwater use only occurs when surface supplies are reduced. Basins are rested following periods of heavy pumping to allow water levels to recover. As summarized in Table A-1, the perennial yield exceeds average annual pumping and groundwater basins are in long-term balance with no overdraft projected. More detailed analysis is available in the LTWSP Environmental Impact Report.

**Table A-1. Groundwater Balance**

Estimated Perennial Groundwater Yield of 3 Groundwater Storage Units:	1,900 AFY
Approximate Pumping by Private Pumpers:	-500 AFY
Net Perennial Yield Available to the City:	1,400 AFY
Average projected City groundwater pumping under LTWSP analysis at full LTWSP demand of 18,200 AFY:	1,000 to 1,300 AFY
Groundwater Production in 2007-2008:	882 AFY

### ***Projection of Supply Availability***

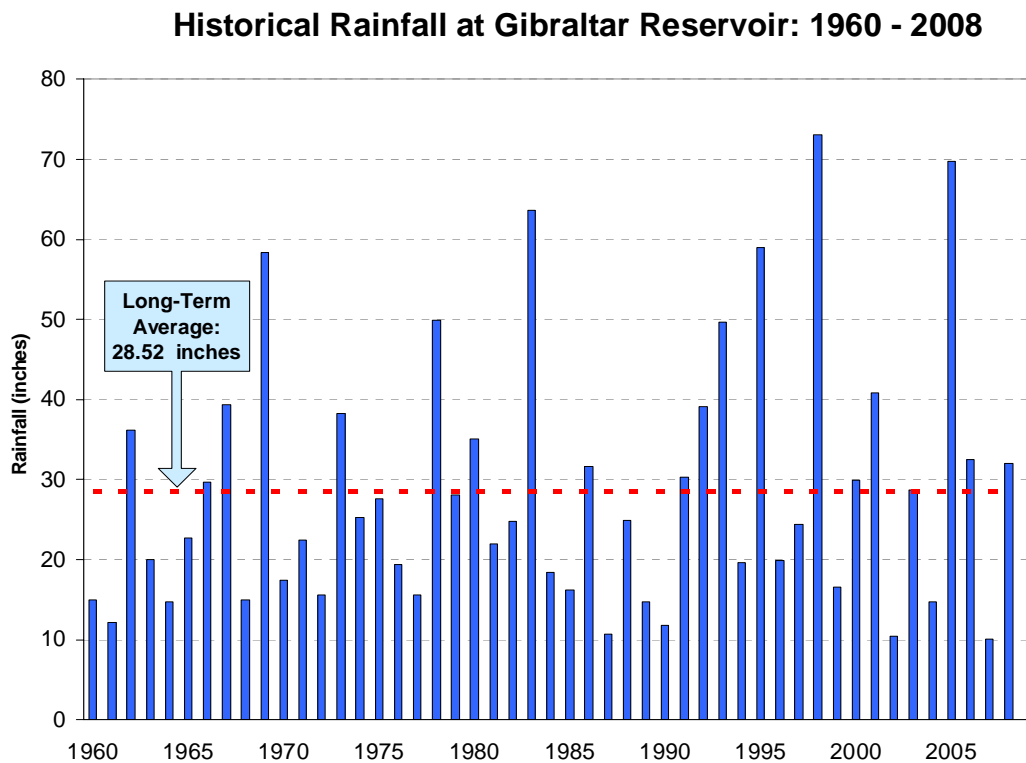
Table A-2 summarizes the City's water supply sources and fulfills a requirement of the project conditions for the SWP. The projected 2008-2009 Supply Plan reflects the past two years of dry weather and aims to position the City for potential continuing dry weather.

**Table A-2. Sources of Supply (AF)**

<b>Source of Supply</b>	<b>2007-2008 Original Plan</b>	<b>2007-2008 Actual</b>	<b>2008-2009 Supply Plan Projected</b>
Gibraltar Reservoir	2,000	1,641	3,341
Cachuma Project	8,277	10,395	7,848
Mission Tunnel	1,100	1,100	1,000
Devil's Canyon	(w/ Gibraltar)	160	(w/ Gibraltar)
Juncal Res. (300 AF from MWD)	(w/ Cachuma)	(w/ Cachuma)	(w/ Cachuma)
State Water Project	825	631	616
Groundwater	998	882	1,195
Desalination	0	0	0
Recycled Water	800	803	800
Net Other Supplies <sup>1</sup>	(na)	-943	(na)
<b>Total Supply:</b>	14,000	14,669	14,800
<b>Total Demand:</b>	14,000	14,669	14,800
<b>Percent Shortage:</b>	0	0	0

<sup>1</sup> Represents miscellaneous production sources (positive values) and water used from the distribution system for purposes such as transfers to adjacent water purveyors, groundwater recharge, or blending with recycled water (negative values).

## Long-Term Rainfall Data



## Per Capita Water Usage

